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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/954,946 | 09/18/2001 | Wilbur C. Bewley JR. | 010909 | 8511 |

7590 06/14/2005

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EXAMINER

WORKU, NEGUSSIE

| | |
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| ART UNIT | PAPER NUMBER |
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2626

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/954,946

Applicant(s)

BEWLEY ET AL.

Examiner

Negussie Worku

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/18/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Detailed Action

DETAILED ACTION

Specification

1. The copending related application referred in the first sentence of the specification is identified by title alone. The first sentence should be amended to identify the application by serial number (or a US patent number if applicable).
2. In the brief description of the drawings at specification page 8, "Figure 3" should be amended to refer to "Figures 3A through 3E".

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed subject matter, including the steps of the method and the apparatus limitations described by the claims, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Horiguchi et al. (US 5,850,290 A).

Regarding independent claim 1, Horiguchi discloses an apparatus comprising (figure 1):

a plurality of scanners (figure 2, numerals 4), each (i.e., figure 4) provides means for obtaining an image (figure 4, numeral 42, which is equivalent to applicant's disclosed structure as depicted at applicant's figure 2) of a portion of a surface of an object (figure 2, numeral 2);

a computer means (figure 2, numeral 7, which is equivalent to applicant's disclosed structure of a general computer system) controlling the scanners (figure 8, numeral 71), capturing images from the scanners ("output signal from each sensor 4" at column 10, line 44), correlating the images ("based on the distance data from each sensor 4, and based thereon, the three-dimensional shape of human body 2 can be calculated" at column 10, line 53), creating a data file therefrom and storing the data file (Implicit; Referring to Figure 8; the entire system is computerized and when the 3D

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shape of the human body is created by the system, it will be in the form of data, and it will be stored in a memory);

wherein each scanner (i.e., figures 3 and 4) is comprised of:

projector means (figure 3, numeral 41; which is equivalent to applicant's disclosed structure at applicant's figure 2, numeral 12) illuminating a portion of the object surface and establishing a visible fiducial thereon (figure 3, numeral 41a is a fan shaped light beam that illuminates the object; "traveling toward the human body 2 experience fan-shaped scanning out" at column 7, line 1); and

digital camera means (figure 3 and 4, numeral 42, which is equivalent in structure to applicant's disclosed digital camera) obtaining an image of the portion of the illuminated surface (as depicted in figure 4);

where the projector and camera are disposed such that optical axes thereof define an optical center situated at a location approximately on the surface of the subject (figure 4 depicts an optical axis of 44 and an optical axis of lens 43 converging at a point on the object 2), and an included angle having its apex coincident with the optical center (as depicted in figure 2);

wherein the scanners are disposed so that collectively, the scanners obtain overlapping images (as depicted in figure 2; the fields of view overlap) and the computer comprises hardware and software (i.e., figure 8).

Regarding claim 2, six scanners are disclosed (as depicted in figure 2).

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Regarding claim 3, an embodiment is disclosed (i.e., figure 11) comprising two scanners directly in front of the subject (4_2 and 4_3), two to the left and right of the front (4_1 and 4_4), and two at the left and right of the rear (4_8 and 4_5).

Regarding claim 4, the cameras are symmetrical (as depicted in figure 2).

Regarding claim 5, the included angle is less than about ten degrees as depicted in figure 4).

Regarding claim 6, the included angles lie in a vertical plane (i.e., as depicted in figure 4 as described above; this is the same configuration disclosed by the applicant at applicant's figure 2).

Regarding claim 7, a supporting means is disclosed (figure 2, numeral 3).

Regarding claim 8, a means for controlling illumination is disclosed (figure 8, numeral 71 controls the sensors 4, which illuminate the subject).

Regarding claim 9, a means for viewing is disclosed ("will be displayed" at column 14, line 55).

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Regarding claim 10, an electronic viewing screen is disclosed (figure 8, numeral 19).

Regarding claim 16, the method recited therein is met by Horiguchi as applied to claim 1 above. Regarding step d, the visual fiduciary indications are displaced (the "moving frame 3" at column 12, line 64, is displaced for subsequent measurements of the subject, whereby the illumination sources which create the visual fiduciaries are also displaced, so as to measure the entire surface of the subject).

Regarding claim 15, the computer system provides the function of correlating the images ("the two data pieces ... are combined, thus measuring the total shape of the human body" at column 11, line 43).

Regarding claim 17, the method recited therein is met by Horiguchi as applied to claim 1 above. Regarding step of creating a computer file: (Referring to Figure 8; the entire system is computerized and when the 3D shape of the human body is created by the system, it will be in the form of data, and it will be stored in a memory).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Horiguchi et al. (US 5,850,290 A) and Iijima et al. (US 6,445,814 B2).

While Horiguchi discloses a means for viewing (i.e., a computer monitor at figure 8, numeral 19),

Horiguchi does not disclose a means for printing a 2D image onto a flat surface.

Iijima discloses a system for creating a 3D representation and data file of an object, wherein Iijima teaches a means for printing a 2D image onto a flat surface (figure 2, numeral 9; "a printer 9 for printing the two-dimensional data of the object 2 and text data on a paper sheet or the like" at column 10, line 8).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to provide a printer as part of the Horiguchi system (i.e., figure 8), as taught by Iijima, in order for the operator to not only display the image as disclosed by Horiguchi, but also to print a hard copy for storage or portability for viewing by others who do not have access to the monitor.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Horiguchi et al. (US 5,850,290 A) and Kostrzewski et al. (US 6,595,644 B2).

While Horiguchi discloses a means for viewing (i.e., a computer monitor at figure 8, numeral 19),

Horiguchi does not disclose a holographic projection means for creating a 3D holographic image.

Kostrzewski discloses a holographic projection means for creating a 3D holographic image ("holographic screen" in the title).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize, as the means for viewing required by Horiguchi, the holographic projection screen taught by Kostrzewski, in order for viewing the 3D data file created by Horiguchi in the full three dimensions, thus accurately portraying the data, and that does "not require the viewer to wear glasses or goggles" (Kostrzewski, column 1, line 13).

9. Claims 13, 14, 18 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yanagida (US 5,088,864 A) and Horiguchi et al. (US 5,850,290 A) as applied to claim 1.

Yanagida discloses a means for manufacturing a 3D model (figure 1, numeral 4) employing subtractive technology ("cutting machine" at figure 1, numeral 3; a cutting machine cuts material away from stock to create the model, thus it is subtractive) in response to a data file (figure 1, numerals 1 and 2).

While Yanagida requires a 3D contour measurement system to create the 3D data file (i.e., figure 1, numerals 1 and 2), Yanagida does not disclose the apparatus defined in claim 1 as creating the data file.

Horiguchi discloses a 3D contour measurement system meeting the requirements of claim 1 as described above.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to utilize the apparatus for creating a 3D data file as disclosed by

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Horiguchi, as the 3D contour measurement system required by Yanagida, because it is “capable of accurately measuring a three-dimensional shape using a small number of sensors” (Horiguchi, column 2, line 33), it is “light-weight” (line 42) and it decrease “operation power” of the apparatus (line 50).

NOTE: It would have also been obvious to incorporate the cutting machine of Yanagida into the system of Horiguchi, in order to provide an actual, physical model of the object being scanned “within a short period of time” (Yanagida, column 1, line 11).

Regarding claim 23 specifically, the Horiguchi system can measure any object (i.e., column 15, lines 61-65), and the Horiguchi and Yanagida combination can produce a model that is larger than the subject of measurement.

10. Claims 19, 20, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sachs et al. (US 5,204,055 A) and Horiguchi et al. (US 5,850,290 A) as applied to claim 1.

While Horiguchi discloses a means for viewing (i.e., a computer monitor at figure 8, numeral 19),

Horiguchi does not teach a means for manufacturing a 3D model employing additive technology in response to the data file.

Sachs discloses a means for manufacturing a 3D model (figure 9 depicts the means, and figure 2E depicts the model) employing additive technology (“depositing a binder ... to produce successive layers of selected regions of bonded power material so

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as to form the desired component" in the abstract) in response to a data file (figure 9, numeral 30).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to employ the means for manufacturing a 3D model as taught by Sachs, as an output device or means for viewing as required by Horiguchi, in order to provide a "three-dimensional printing" technique (Sachs, column 1, line 48) so that the operator can view the data file completely (i.e., not just in two dimensions) to ensure its overall accuracy.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Negussie Worku whose telephone number is 571-272-7472. The examiner can normally be reached on 9am-6pm.

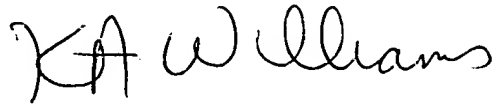
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on 571-272-7471. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Negussie Worku
05/06/05



KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER